uncomplicated bone metastases. Actually, no evidence based recommendations are available for the treatment of complicated bone metastases. This study was conducted to evaluate the effectiveness in term of symptom control of a SHort course Accelerated RadiatiON therapy (SHARON study) in the treatment of patients with complicated bone metastases.

Materials and Methods: A phase II clinical trial was designed. Patients with complicated bone metastases metastases, and Eastern Cooperative Oncology Group (ECOG) performance status ≤ 3 were included. Treatment was delivered in two days with a twice daily fractionation and at least an eight hour interval at 20 Gy (5 Gy per fraction). The primary endpoint was the assessment of efficacy in terms of pain relief.

Results: Characteristics of the 25 enrolled patients were: male/female: 14/11; median age: 65 years (range, 45 to 85 y). The site of the primary tumor was: lung (36%), breast (32%), prostate (12%), kidney (8%), rectum (4%), thyroid (4%), and uterus (4%). All patients had pain at the time of treatment. Three weeks after treatment, the response of pain was evaluated by visual analogue scale (VAS). 23 of the 25 symptomatic patients had improvement or resolution of pain based (overall response rate to the symptom: 92.5% CI 0.95: 68.68% - 99.13). Specifically, 8 patients (32%) had complete resolution of pain, 15 patients (60%) had a partial response and 2 patients (8%) remained stable. A statistically significant reduction in pain assessed by VAS, was recorded (pre-treatment vs. post-treatment mean VAS = 5.9±2.6 vs. 2.7±2.5; p = 0.039). Only 1 patient required retreatment at 12 months. In addition, 18 of the 25 patients (72%) showed improvement or stability ECOG. Only acute toxicities of grade 1 and 2 were recorded: skin G1 =16%, hematological (anemia) G1 = 4%, gastro-intestinal G1 (diarrhea) = 4%, gastrointestinal (nausea and vomiting) G2 =8%.

Conclusions: Short course accelerated radiotherapy of 20 Gy BID in two consecutive days is effective in term of symptoms relief. These results justify a phase III comparison against the standard-of-care in these patients' population (30 Gy in 10 fractions).

EP-1292

Stereotactic body radiotherapy for liver metastases in patients with oligorecurrence from variable tumor

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Purpose/Objective: Recent technology of diagnosis has increased prevalence of oligometastatic patients. Stereotactic body radiotherapy (SBRT) to oliogometastases showed outstanding local control but also promising overall survival. Though liver oliogmetastses is a most common site for surgery, above 70% of these patients are unresectable. An effective and safe local modality option is necessary for these patients. We analyzed outcomes and toxicity for patients with liver oligometastases treated by SBRT from variable tumors.

Materials and Methods: Seventy-two patients with liver oligometastases from 2002 to 2013 were treated by SBRT consecutively. Among them, 17 patients excluded; uncontrollable distant metastases in 9 patients and immediate follow-up loss after treatment in 8 patients. A total of 55 patients with 77 lesions were analyzed retrospectively. Primary lesion of all patients was controlled, the patients with stable lesions in another site in 28 patients. The most common primary organ was colon in 36 patients followed by the stomach 6 patients, and other 13 patients. The tumor volume was calculated by sum of total GTV. The median volume was 20 cc (0.7-721.2 cc). Thirty-eight (69%) of the patients had a single metastatic lesion. Total SBRT dose was from 30 to 60 Gy (median 48 Gy) by 3-4 fractions. Thirty-nine (72%) of the patients received chemotherapy as part of their primary treatment. Toxicity was evaluated by Common Toxicity Criteria for Adverse Events Version 4.0 Grading scale.

Results: The 2 and 5-year overall survival rate was 56% and 20%, respectively. Actuarial 2 year local control and progression free survival rate were 60% and 22%, respectively. Grade 1-2 fatigue, nausea, and vomiting were the most common adverse events, and no grade 3 and higher adverse events were observed. By multivariate analysis according to survival, other visible lesion was a statistically significant factor.

Conclusions: SBRT for liver oligometastases seems to be safe. High SBRT dose is correlated with high local control. To obtain survival gain through SBRT among patients with oligorecurrence, criteria of optimal candidate is mandatory.

EP-1293

Single fraction radiotherapy (8 Gy) on painful bone metastases with involvement of the adjacent soft tissues

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Purpose/Objective: 8 Gy single fraction (flash) conventional external beam radiation therapy is the most commonly administered single fraction dose and is considered the standard treatment for uncomplicated bone metastases. However, its efficacy is uncertain in patients with bone metastases involving the adjacent soft tissues. Aim of the study was to evaluate the flash efficacy in terms of pain control for this particular patient setting.

Materials and Methods: An observational study of patients treated with Radiotherapy for bone metastases was conducted from January 2003 to December 2010 in our Department. The study included patients with painful bone metastases of any primary sites and any ECOG performance status < 4. Eight Gray single fraction conventional external beam radiation therapy (3DCRT) was administered. Patients were evaluated for pain with visual-analogue scale (VAS) before and 3 weeks after irradiation. Pain response was

classified according to the categories of Chow (IJROBP, 2012).

Results: 248 consecutive patients (Male/Female: 144/104; median age: 68 years;range:27-94 years) were included in the study. On the basis of radiological exams and CT simulation, 86% of the patients (214/248) had no extra-osseous extension compared to 14% (24/248) that presented bone disease with involvement of the adjacent soft tissues. All the patients were symptomatic for pain at the time of treatment. Three weeks later, 44% of the patients (109/248) showed pain reduction or resolution. In detail, 58 patients (23.5%) obtained a complete response (CR), 51 (20.5%) a partial response (PR), 63 (25%) no response to treatment (pain worsening) and 76 (30%) had an unspecified response. A statistically significant pain reduction was reported (pre- vs post-RT mean VAS: 4.6 versus 3.7; p=0.0001). CR rate (table 1, p:0.678) as well CR+PR rate (p:0.274) were not significantly associated with extra-osseous extension.

Table 1

Pain Response	Bone metastases without extra-osseous extension	Bone metastases with extra-osseous extension	Total
CR	51 (24%)	7 (20%)	58
PR/UR/P	163 (76%)	27 (80%)	190
Total	214	34	248

p: 0.678, χ2 test; CR: Complete Response; PR: Partial Response; UR: Undefined Response; P: Progression (Chow, IJROBP, 2012).

Conclusions: The efficacy of 8 Gy single fraction schedule was confirmed in terms of pain control even in patients with bone metastases with extension to soft tissues. The relatively low analgesic response is likely due to the administering of analgesic drugs before irradiation in the majority of cases.

EP-1294

Static and volumetric IMRT for brain metastases stereotactic hypofractionation: is there any difference?

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Purpose/Objective: To evaluate and to compare the dosimetric features of static and volumetric intensity-modulated radiotherapy (IMRT) for brain oligometastases hypofractionated stereotactic treatment, focusing on the dosimetric comparison between the single and multiple isocenters modalities for multiple contiguous brain metastases.

Materials and Methods: Patients with single or multiple brain metastases, in the same lobe or contiguous, treated by hypofractionated stereotactic RT in our Institution were enrolled. For each patient 2 treatment plans were performed: a static (5 fields) and a volumetric (2 arcs) IMRT plans. For patient with multiple brain metastases, each plan was performed in 2 different modalities: single and multiple isocenters. The PTV was the lesion + 3 mm. In single isocentre modality plans, for patients with multiple lesions, the definitive PTV was the PTV sum of each single lesion. The prescribed dose to lesions was 25.5 Gy/3fr. Plans were evaluated for: monitor units (UM); Conformity Index (CI); Homogeneity Index (HI); Paddick Conformity Index (PCI); Gradient Index (GI); normal brain mean dose; brainstem, optic chiasm, optic nerves maximum dose; EQD2 hyppocampus mean dose. Dose-volume histograms were compared by Friedman test.

Results: Thirteen patients were included in the analysis, 7 patients with a solitary lesion, 6 patients with multiple (2-3) metastases in the same lobe or contiguous, with a total of 20 treated lesions. The median CTV was 0.71 cm^3 (range, 0.21-5.26), median PTV was 4.7 cm^3 (range, 1.5-18.47). Median mean dose to normal brain tissue was 1.79 (0.68-6.27) for volumetric IMRT and 1.92 (0.69-8.70) for static IMRT (p: 0.024). Among the 6 oligometastatic patients, a total of 13 lesions was analyzed. For multiple isocenters modality plans median CTV was 0.53 cm^3 (0.21-3.27), median PTV was 3.64 cm^3 (1.49-18.47). For single isocentre modality median CTV was 1.59 cm^3 (0.47-5.95), median PTV 10.68 cm^3 (2.99-27.08). Median mean dose to normal brain tissue was 3.72 (1.80-5.84) and 3.52 (2.49-5.67) for static IMRT in single and multiple modality, respectively, 3.84 (2.41-6.27) and 3.22 (2.02-5.31) for volumetric IMRT in single and multiple isocentre modality, respectively (p:0.009). Median GI for static IMRT plans was 1.62 (1.40-2.05) and 1.50 (1.30-1.70) in single and multiple isocentre modality respectively, 1.60 (1.25-1.95) and 1.35 (1.15-1.60) for volumetric IMRT plans in single and multiple isocentre modality respectively (p: 0.024). None of the other studied parameters resulted in significant differences.

Conclusions: In our experience static and volumetric IMRT are both efficient techniques for intensity modulated hypofracionated stereotactic treatment. Volumetric IMRT seems to results in lower normal brain dose in single isocenter modality; multiple isocenters modality seems to reduce normal brain irradiation in treating multiple contiguous lesions.

EP-1295

Lymph node oligometastases treated with SABR: effect of dosimetric parameters on treatment outcomes

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Purpose/Objective: Stereotactic Ablative Body Radiotherapy (SABR) has emerged as a novel treatment modality for local extracranial metastases such as lymph node oligometastases with promising clinical results. This study aims to investigate the relationship between dosimetric parameters of SABR and treatment outcomes for patients with unresectable nodal metastases.

Materials and Methods: A retrospective review of SABR patients who were treated using a Cyberknife unit at our institution was carried out to determine each patient's Progression Free Survival (PFS) and Overall Survival (OS). Patient's demographic data including age, anatomical location of sites treated and histopathology of primary disease were reviewed. Assuming a/ß=10 for tumour control, dosimetric parameters including biological equivalent doses (BED) of prescription dose, minimum dose and mean dose to GTV and PTV (GTVmin, GTVmean, PTVmin and PTVmean)